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INTERACTIVE DATA: TECHNOLOGY AND COST OF CAPITAL

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Abstract

We examine the introduction of the voluntary filing program (VFP) by the Securities and Exchange Commission (SEC) for the introduction of XBRL (eXtensible Business Reporting Language), or Interactive Data as called in the US. XBRL is a machine-readable standardized format for financial reports. The VFP allowed firms to file annual and quarterly reports using XBRL. This program represents a quasi-natural experiment to isolate the effects of an improvement in the information environment of program participants. We study two documented effects of voluntary disclosure (Healy and Palepu, 2001), reduced cost of capital and increased information intermediation. Our results show a decrease in the cost of capital, especially for financial and IT firms, and an increase in information intermediation. These effects support existing literature on the adoption of IT in firms and voluntary corporate disclosure and sheds light on the decision to be an early adopter of XBRL reporting technologies.

Keywords: Voluntary Disclosure, Information, Cost of Capital, Financial Reporting.

1 Introduction

How does the adoption of technological innovations by firms translate into increased economic value if at all? Previous IS literature have studied this question thoroughly, using different measures (cf. Hitt and Brynjolfsson, 1996) and analyzing different kinds of IT investments. The IT innovation that we are focusing on is the introduction of a standardized format for corporate filings, called Interactive Data. Recent developments in IT have facilitated increased financial information transparency over the last decades. This change has translated into easier access for investors and regulators to financial reports and firm disclosure, for example via the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR) system. The increased automation of the process has also led to reduced time and cost of filing financial reports. The Internet and other communication technologies have also led to an enormous decrease in the time and expense of accessing and analyzing financial reports and other valuation relevant disclosure. Our goal in this paper is to apply existing measures of economic success on a quasi-natural experiment. We specifically analyze the economic effects of a voluntary filing program (VFP) for the introduction of eXtensible Business Reporting Language (XBRL), or Interactive Data as it is called in the US. XBRL is an Extensible Markup Language (XML) based format which is geared towards financial information and allows tagging of this information using standard taxonomies. We expect that this exogenous variation has short-term effects on the returns and liquidity of participating companies as well as more long-term effects on their cost of capital and their following analysts.

In April 2005, the Securities and Exchange Commission (SEC), the regulating authority in the US, introduced a VFP for the introduction of XBRL, designed to make financial reports more accessible and to reduce the cost to prepare and analyze these. On April 13th, 2009, the SEC made the filing in Interactive Data format compulsory by adopting rule 33-9002 (SEC, 2009). The mandatory SEC program was implemented by a staggered introduction over three years. In the first year, large U.S. “Generally Accepted Accounting Principles” (GAAP) filers with a public float over $5 billion were required to use Interactive Data. In the second and third year, the rest of U.S. GAAP and “International Financial Reporting Standards” (IFRS) filers followed. The SEC's goal by adopting XBRL is to enhance transparency and to facilitate investors' financial reports analysis. The machine- readable format significantly enhances the speed of financial statement analysis by investors. Transparency may be increased with XBRL usage as investors can electronically download and analyze reports in a standardized structure and format with pre-defined semantics and taxonomies (dictionary of terms). They are able to use information directly from financial statements in financial applications with little data transformation and interpretation. However, the SEC's regulatory requirement that all public companies use XBRL was introduced with little analysis of the impact of XBRL on firms and markets.

In this paper, we study the effects of voluntary early adoption of Interactive Data. Specifically, this paper investigates the market effects after the introduction of Interactive Data, which qualifies as an instance of voluntary corporate disclosure. We test two hypotheses found in the literature of possible effects of voluntary disclosure. These are more precisely reduced cost of equity capital and increased information intermediation. Our results are statistically significant on the reduction of the cost of capital of the participants as well as on increased information intermediation. We believe that our proposed research questions are interesting and relevant for researchers as well as practitioners. Our analyses will shed light on the question how voluntary interactive disclosure influenced firms' costs of capital and access to information by investors.

The remainder of the paper is structured as follows. Section 2 develops the examined hypotheses with respect to related work. Section 3 provides information on the data and the sample selection process. Section 4 explains the methodology used. Section 5 provides results and section 6 finally concludes.

2 Hypothesis Development

In this section, we discuss the economic and technical improvements for both participating firms and investors that want to gather information about this firm. Furthermore, we show that the introduction of XBRL qualifies for an action of voluntary disclosure of corporate information since it makes the filing information accessible more easily. Therefore it serves as a signal for better corporate government and innovation of the company. This connects our study to a large body of literature on voluntary and non-voluntary corporate disclosure of information, for instance the introduction of e accounting standards in firms. The economic implications of voluntary disclosure have already been thoroughly analyzed in accounting literature, but are also playing a more vital role in IS since the disclosure of financial information as well as the retrieval have become easier and more automated.

PEPSICO, INC. AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENT OF INCOME
(in millions except per share amounts, unaudited)

	12 Weeks Ended	
	3/22/08	3/24/07
Net Revenue	**$ 8,333**	$ 7,350
Cost of sales	**3,834**	3,285
Selling, general and administrative expenses	**2,934**	2,635
Amortization of intangible assets	**12**	11
Operating Profit	**1,553**	1,419
Bottling equity income	**70**	74
Interest expense	**(58)**	(42)
Interest income	**1**	22
Income before income taxes	**1,566**	1,473
Provision for income taxes	**418**	377
Net Income	**$ 1,148**	$ 1,096

Figure 1. Exemplary Filing in HTML Format

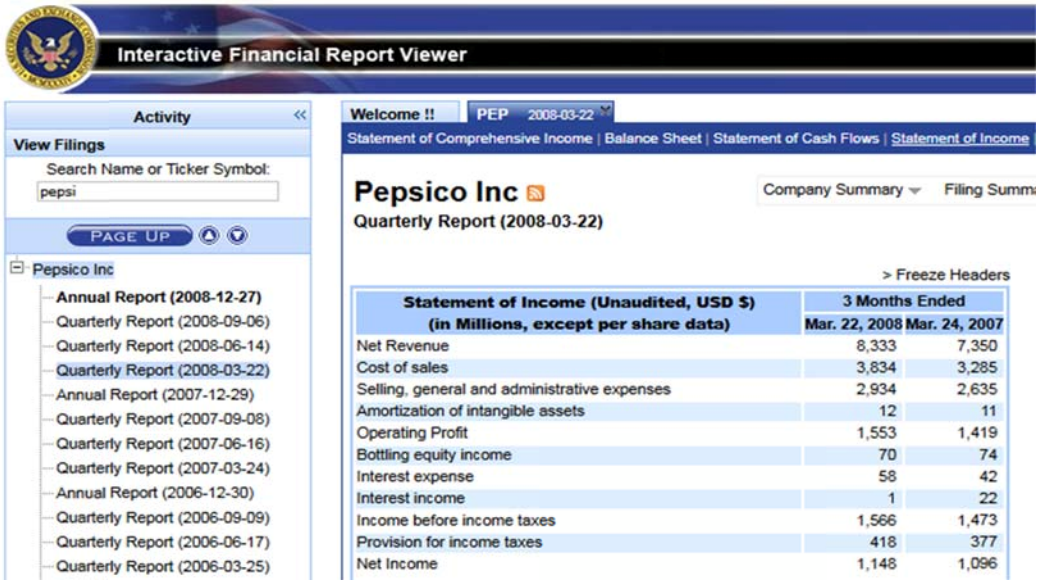

Figure 2. Exemplary Filing in Interactive Data Format

From the perspective of investors, Interactive Data enhances various aspects of their work with financial data. Formerly, firms submitted an html file and a pdf document of their report to the EDGAR system. An exemplary statement of income of Pepsi Co. is shown in Figure 1. The

introduction of Interactive Data has made it possible to find, analyze, and compare financial data of participating companies in the “Interactive Financial Report Viewer”, as depicted in Figure 2. But next to the apparent new features of the new platform, the standardized format itself offers various opportunities for analysts and traders. Using the old format, analysts had to go through financial reports manually to find a specific value and copy and paste it into their spreadsheet or database. The voluntary provision of financial reports in Interactive Data format facilitates the work of analysts since it makes financial information automatically processable and comparable. This might play an important part in the decision of analysts whether to cover a specific stock in their analysis or not.

2.1 XBRL Literature

The literature on XBRL has been growing in the last years and involves various aspects of the topic, such as quality assurance and technical issues. Assurance issues involve extensions of standard taxonomies which hinder the comparability of reports as well as errors in the reports filed. Boritz and No (2008) analyze the quality of XBRL filings and suggest a quality assurance program to validate the filings. Debreceny et al. (2005) point out several technical research directions concerning XBRL, among others new taxonomies, financial statement assurance, and interoperability issues.

Research on the economic effects of XBRL introduction is still relatively sparse. One line of literature analyzes company characteristics of voluntary early filers. Premuroso and Bhattacharya (2008) examine whether early and voluntary participants of the voluntary filing program demonstrate superior corporate governance and operating performance relative to their non-participating peers. Callaghan and Nehmer (2009) find that participating companies are bigger, less financially leveraged and have lower corporate governance rating. They conclude that the companies voluntarily adopt XBRL in order to improve their corporate governance appearance. As from interviews with business managers in Canada, Germany, South Africa, and the U.S. (cf. Pinsker and Li, 2008), companies that introduce XBRL were further expecting to attract a broader group of investors and lower cost of capital.

Another line of literature concentrates on the direct effects of voluntary XBRL filing. Yoon et al. (2010) examines whether XBRL adoption reduces information asymmetry in a stock market context. Hodge et al. (2004) show that XBRL increases market transparency. We contribute to the second line of literature. We are not able to control for the selection bias of participating companies, but rather characterize the overall effect on the participating company with respect to their cost of capital and the number of analysts following.

Additionally, we further analyze different groups of participants to detect the groups benefitting most from the early adoption. From the very different motives of VFP participation (as presented by Callaghan and Nehmer, 2009, and Pinsker and Li, 2008), we assume different motives for companies of different industry groups and of different degrees of innovation, for example Information Technology companies compared to Utilities companies. Specifically, IT companies and financial service companies seem to have stronger incentives to participate in the VFP in order to acquire knowledge on XBRL in advance and to have the know-how to offer and consult their clients.

2.2 Cost of Capital

The measurement of the economic value of information systems has been an important and prevailing research question during the last decades. We apply a classic event study methodology as formalized by MacKinlay (1997) and applied by Subramani and Walden (2001). The latter analyzed the impact of electronic commerce initiatives on the market value of companies using abnormal returns. Event studies have become an established method to measure the success and economic value of IT investments and the announcements thereof. While previous literature has concentrated on the short-term effects of IT investment on returns several days after the event, our study also considers long-term effects on the cost of capital of VFP participants.

The cost of capital hypothesis states that companies increase their level of voluntary disclosure to reduce adverse selection risks for investors. A theoretical analysis is provided by Easley and O'Hara (2004), who analyze how private and public information affect the cost of capital. For firms with a low

level of public information in relation to private information, investors require higher returns to offset uncertainty about asset returns and uninformed investors are disadvantaged to informed investors who are better able to incorporate new information in their investment decision. Thus, a firm's cost of capital increases with the level of private information. Botosan and Plumlee (2001) present empirical evidence that the cost of equity capital decreases with an increase in the transparency of annual reports. In line with these results, Gray et al. (1995) state that the primary goal of firms is to lower the cost of capital. They do this by voluntarily disclosing information and thereby reducing "information risk" and investor uncertainty about the quality of the firm and the expected returns from its securities. Therefore, we expect positive abnormal returns on a short-term basis after the filing of the first XBRL report and a significantly lower level of cumulative abnormal returns long-term as a sign for lower cost of equity capital. Therefore, the first hypothesis is:

H1: The voluntary introduction of Interactive Data leads to a decreased cost of equity capital for participants.

We measure abnormal returns with two different asset pricing models, the market model as in Fama and French (1969) and Fama-French Three-Factor Model (cf. Fama and French, 1997).

2.3 Information Intermediation

The second hypothesis on information intermediation captures the positive effects on investors and analysts. Existing research on corporate disclosure suggests a negative relationship of information disclosure and information asymmetry (cf. Lang and Lundholm 1996; Leuz and Verrechia 2000). A higher level of voluntary disclosure enables more analysts to access and aggregate information. This increases the number of analysts following a specific stock. As indicated above, Interactive Data has several advantages for analysts and investors. It enables them to follow a specific stock more easily and therefore attracts more analysts. Furthermore, voluntary disclosures also might help lesser known firms to make investors aware of their existence, as modeled theoretically by Merton (1987). Thus, H2 is as follows:

H2: The number of analysts following increases with the introduction of Interactive Data.

Lang and Lundholm (1996) indicate increased investor following with a higher score of informativeness of a firm's disclosure policy. Fang and Peress (2010) find that breadth of information dissemination has an influence on stock returns. They discover an economically significant return premium on stocks with no media coverage. Such a return premium can also affect the cost of equity capital. We adopt the measure of Lang and Lundholm (1996), number of analysts following, as proxy for information risk.

3 Data and Sample

Market data is used from Compustat and Thomson Reuters Tick History. For the identification of the participating companies, we use the report data from the 162 participating companies between April 4, 2005 and March 23, 2009 from the SEC website. The data cleaning is described in Panel A of Table 1. We exclude companies, like trust funds and ADRs (American depository receipts) since we are interested in effects of increased information and transparency proxied through Interactive Data on common stocks. We also remove firms with mergers, stock splits or other kinds of corporate actions (reverse splits, etc.) during our estimation period in order to exclude distorting effects in our data. Our final data sample consists of 92 US companies from 10 different industry groups, as shown in Table 1,
Panel B The companies were listed both on the NASDAQ and NYSE and filed their first XBRL report between April 4, 2005 and March 2009. The number of reports increased constantly, from 27 reports between April 2005 and March 2006 to 254 reports between April 2008 and March 2009 (cf. Table 1,

Panel C). The number of first reports, i.e. the number of starting participants, was also steadily increasing in this period of time.

Panel A: Sample Creation Procedure		
Sample	Change	Number of Companies
All filers between April 4, 2005 and March 23, 2009		162
All companies without trust funds	(35)	127
Companies with available RICs	(8)	119
Companies without ADRs	(19)	100
All data available and non pink-sheets	(2)	98
Without Stock splits	(6)	92

Panel B: Industry Groups		
Industry Group	Industry Group ID	Number of Companies
Materials	1000	8
Consumer Discretionary	2000	8
Consumer Staples	3000	6
Health Care	3500	8
Energy	4000	10
Financials	5000	13
Industrials	6000	14
Information Technology	8000	17
Telecommunication Services	8600	1
Utilities	9000	7
Total Number of Companies		92

Panel C: Report Counts		
Year Apr-Mar	Number of reports filed	Number of first reports filed
2005/06	27	5
2006/07	105	15
2007/08	192	21
2008/09	254	51
Total Number of Reports	578	

Table 1. Event Study Sample Distribution

Table 2 depicts distributional characteristics of participating companies. From Compustat, we collect per-share data for daily close prices in dollars (*Close*), daily P/E ratios (*P/E*), and daily market capitalization in millions of dollars (*Market*). *NEst* denotes the number of analyst estimates in one month. The participating companies range from big companies like General Electric and Microsoft to smaller companies like Bowne & Co. and ICU Medical Inc. They belong to ten different industry groups, with Information Technology, Energy, and Financials representing the largest groups of participating companies (cf. Table 1, Panel B).

Variable	Mean	Minimum	Maximum	25th %tile	Median	75th %tile	Std. Dev.
Close	40.245	2.324	357.395	24.599	34.698	47.304	37.822
P/E	16.948	-110.726	202.047	8.424	14.152	18.996	39.003
Market	29,817	58	335,447	4,895	10,909	25,577	54,736
NEst	33.861	1	109	21	34	45	18.274

Table 2. Distributional Characteristics of Participating Companies

For the analysis on information intermediation, we use earnings estimates from Institutional Brokers' Estimate System (I/B/E/S), specifically one-year ahead and two-year ahead EPS estimates as well as the forecasted long-term growth rate. Additionally, we cluster our sample into groups. Firstly, we analyze the firms in the industry group "Information Technology and Finance" (*ITFI*) and firms not in this group (*non-ITFI*) separately. Secondly, we distinguish between the first filers in an industry

(*FIRST*) and those participants who are not (*non-FIRST*). We do this to determine if there are industry and time idiosyncratic effects.

4 Methodology

In order to test our hypotheses, we use an event study and a panel regression. The event study measures the effect of a voluntary XBRL introduction on the cost of equity capital of a company which represents the financing opportunities of investments and innovations in the future. Information intermediation is important since it represents the information asymmetry between investors and firms. Thus, higher information intermediation caused by an easier information retrieval can lead to an increase in analysts following the specific stock.

4.1 Cost of Capital: Event Study

Event studies have become commonly used instruments to identify and measure the impact of the announcement of new, value-changing information on stock returns. We apply an event-study methodology as described in MacKinlay (1997). In detail, different asset pricing models are fitted to measure abnormal stock returns during the event windows in order to test for differences in the distribution of abnormal returns. The null hypothesis for these tests is that the event has no impact on the distribution of returns. The filing of the first Interactive Data report is set as Day 0 for each participating company and we measure the OLS model coefficients during the estimation period (day
-211 to -11) in order to compute expected returns and thereby cost of equity capital. The prediction errors during different event windows (13 days from day -10 to +2, 21 days from day -10 to +10, and
41 days from day -10 to +30) can be interpreted as the abnormal returns during these periods, more
precisely $\square\square_{\square\square} = \square_{\square\square} - \square[\square_{\square\square}|\square_{\square}]$. The event windows are relatively short in order to avoid other
possible events that might influence stock prices. The first filing with XBRL is taken as our event date
since we do not have information on firms' announcement dates for their participation in the SEC's voluntary XBRL filing program. Starting ten days before the actual event captures possible announcement or information leakage effects in this period. Our results are robust to different estimation and event windows.

We follow the standard event-study methodology, which compares the difference of abnormal returns before and after the event. Abnormal returns are computed with the market model by Fama et al. (1969) and the Fama-French Three-Factor Model (cf. Fama and French, 1997) in order to calculate expected returns and cost of capital. The Capital Asset Pricing Model (CAPM) is implemented to ensure robustness and yields similar results. The statistical market model serves as a basic model which "relates the return of any security to the return of the market portfolio" (cf. Fama et al., 1969):

$$\square_{\square\square} = \square_{\square} + \square_{\square}\,\square_{\square\square} + \square_{\square\square}$$

with R_{it} and R_{mt} being the return in period t of security i and of the market portfolio respectively.

The Fama-French Three-Factor Model falls into the category of multifactor risk models. It introduces
three risk premia, the equity risk premium (ERP), equal to the difference of the market risk premium and the risk-free rate of return (the excess return of the market r_m-r_f), the "small minus big risk premium" (*SMB*), as the difference of return of small- and large-cap portfolios, and the "high minus low risk premium" (*HML*) estimated historically as the difference of high and low growth portfolios. We use the Fama-French factors as provided on Kenneth R. French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, accessed date: 2011-12-
01) and estimate the factor coefficients b_i, s_i, and h_i using the following regression model:

□□□ = □□□ + □□ ⊛ □□□ − □□□ ⋒ + □□ □□□ + □□ □□□ + □□□

Daily abnormal returns are summed up to cumulative abnormal returns, $CAR_{i,t_1,t_2} = \sum_{t=t_1}^{t_2} AR_{i,t}$ = $R_{i,t} - E[R_{i,t}|X_t]$, in order to measure the aggregate effects of the event. We apply robust standard test statistics as proposed in Patell (1976) to measure the statistical significance of the *CARs*.

4.2 Information Intermediation: Panel Regression

In order to analyze whether the introduction of XBRL facilitates information intermediation, monthly number of EPS forecasts serve as a proxy for the number of analysts following the specific company and therefore for the attractiveness of the stock. We aggregate the number of all monthly estimates from I/B/E/S (*NEst*) and perform a panel regression on this data by using a dummy variable representing the time before and after the introduction of XBRL:

$$NEst_{i,m} = \alpha_i + \beta_1 XBRL_{i,m} + \varepsilon_{i,m}$$

where *m* denotes the month and *i* the cross section. To test the impact of VFP participation on information intermediation, a panel regression with firm fixed effects is estimated (firm dummies are not reported for brevity) and tested using robust standard errors (cf. Arellano, 1987).

5 Results and Interpretation

In the first part of our analyses, we event study results using cost of capital models (the market model and Fama French Three-Factor Model) to test the hypothesis that the SEC's voluntary filing program decreases the cost of capital. Firms are further clustered by industry group, specifically Information Technology and Financials (ITFI) and other industry groups, and by being a first adopter in an industry. We assume stronger motives for these industry groups to participate in the program, since the introduction of XBRL can have strategic relevance for these firms, for example consulting expertise, and therefore the participation might have a stronger effect on these firms. In the second part, we conduct a regression analysis in order to show the effect of XBRL introduction on the number of analysts following the specific stock.

5.1 Cost of Capital

Table 3 provides results for the explicit cost of capital models. Panel A shows results with the market model, and Panel B gives the results based on the Fama French Three Factor Model. Focusing on the 2 day event window, the results yield positive (though no significant) short-term abnormal returns after the first filing of XBRL. While the average CARs are higher for non-ITFI firm, we cannot make inferences from the results. The variation of the estimation and event window does not provide different results. For the results on the more long-term cost of capital, we find significant results for an event window of 41 days and the industry groups ITFI. For this subsection, both models have negative coefficients and all are significant at the 5% level. We thus conclude that voluntary XBRL filing leads to a reduction in the cost of capital by. Since results are not significant for the other industry groups, leading to the conclusion that filers in the ITFI group experience a stronger negative effect on their cost of capital than other industry groups. The effect of the first XBRL filing is also shown in Figure
3, which also demonstrates a clear downward tendency of CAR for ITFI group firms.
Furthermore, we carry out the same analysis with the group of firms being the first filer in their industry group and those which are not. From the results, we can observe significant and positive short-term abnormal returns for first adopters as compared to non-first adopters which experience negative or at least insignificant abnormal returns. As for the cost of capital that we infer from more long-term abnormal returns, we find significantly lower cost of capital than before the first XBRL
filing for non-first adopters, while the returns of first adopters are still positive and significant. This
result is also evident from longer event windows. Therefore, we infer two opposing effects for the groups. First adopters seem to experience a positive effect on their abnormal returns. On the other

hand, non-first adopters have decreasing effects on their cost of capital which is reflected by the long-term abnormal returns and higher level of transparency. This means that investors are willing to get less compensation for their investment into the firm.

Panel A: Market Model					
Event window	***IT, Financials***	***N***	***Average CAR***	***p-value***	
[-10;2]	all	92	0.0586	0.5757	
[-10;2]	0	62	0.0619	0.6278	
[-10;2]	1	30	0.0517	0.7789	
[-10;10]	all	92	-0.1035	0.3235	
[-10;10]	0	62	-0.0081	0.9492	
[-10;10]	1	30	-0.3006	0.1102	
[-10;30]	all	92	-0.2417	0.0227	**
[-10;30]	0	62	-0.1402	0.2739	
[-10;30]	1	30	-0.4514	0.0193	**
Panel B: Fama French Three-Factor Model					
Event window	***IT, Financials***	***N***	***Average CAR***	***p-value***	
[-10;2]	all	92	-0.0046	0.9650	
[-10;2]	0	62	0.0109	0.9321	
[-10;2]	1	30	-0.0365	0.8429	
[-10;10]	all	92	-0.1595	0.1296	
[-10;10]	0	62	-0.0491	0.7003	
[-10;10]	1	30	-0.3875	0.0422	**
[-10;30]	all	92	0.2332	0.0227	**
[-10;30]	0	62	-0.1194	0.3509	
[-10;30]	1	30	-0.4684	0.0155	**

***: significant on a 1% level / **: significant on a 5% level / *: significant on a 10% level

Table 3. Event Study Analysis of Abnormal Returns Grouped by Industry Group

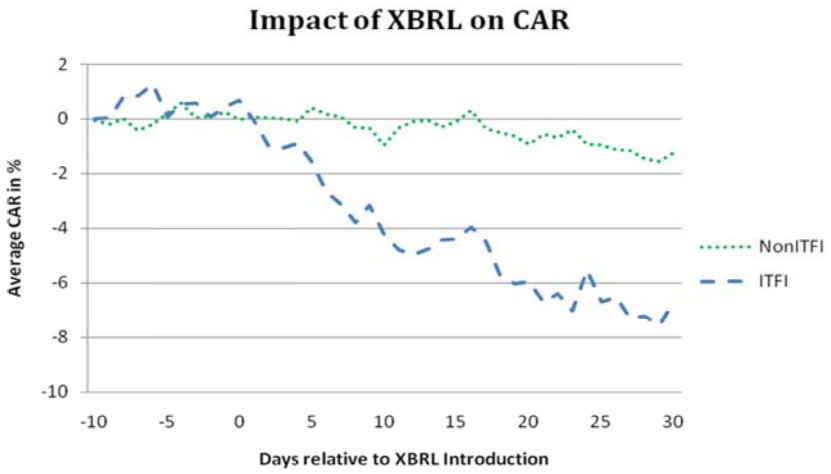

Figure 3. Impact of XBRL on CAR (Fama-French Three-Factor Model, by Industry Group)

Panel A: Market Model					
Event window	***First Adopter***	***N***	***Average CAR***	***p-value***	
[-10;2]	all	92	0.0586	0.5757	
[-10;2]	0	81	-0.0233	0.8345	
[-10;2]	1	11	0.6613	0.0507	*
[-10;10]	all	92	-0.1035	0.3235	
[-10;10]	0	81	-0.2162	0.0551	*
[-10;10]	1	11	0.7266	0.0346	**
[-10;30]	all	92	-0.2417	0.0227	**
[-10;30]	0	81	-0.3598	0.0017	**
[-10;30]	1	11	0.6284	0.0612	*
Panel B: Fama French Three-Factor Model					
Event window	***First Adopter***	***N***	***Average CAR***	***p-value***	
[-10;2]	all	92	-0.0046	0.9650	
[-10;2]	0	81	-0.0965	0.3877	
[-10;2]	1	11	0.6723	0.0475	**
[-10;10]	all	92	-0.1595	0.1296	
[-10;10]	0	81	-0.2931	0.0100	**
[-10;10]	1	11	0.8248	0.0194	**
[-10;30]	all	92	-0.2332	0.0227	**
[-10;30]	0	81	-0.3830	0.0009	***
[-10;30]	1	11	0.8700	0.0148	**

***: significant on a 1% level / **: significant on a 5% level / *: significant on a 10% level

Table 4. Event Study Analysis of Abnormal Returns Grouped by First Adopters

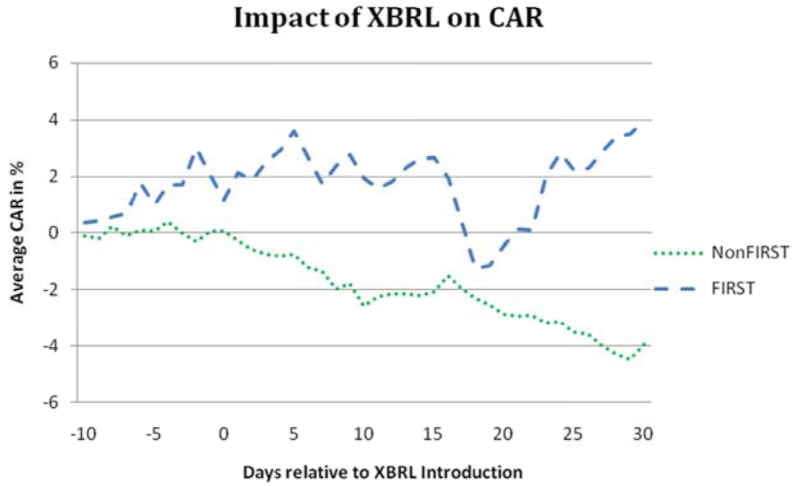

Figure 4. Impact of XBRL on CAR (Fama-French Three-Factor Model, by First Adopters)

5.2 Information Int rmediation

Table 5 provides results that the introduction of XBRL leads to a significantly increased number of analyst counts, proxied by the number of monthly analyst estimates from I/B/E/S. We find a

significant increase in analyst counts consistently for all industry groups. This is consistent with our expectation that the introduction of XBRL enables more analysts to acquire information and therefore increases the supply of analysts covering a stock. The introduction of XBRL however does not have significantly positive results on the monthly number of analysts following an ITFI company. This again supports the assumption that this industry group is driven by other motives that might not be captured by our chosen economic measures. Especially for companies in the industries financial services and IT, there are incentives such as a consulting purposes and investment opportunities to voluntarily adopt XBRL. Additionally, filing through Interactive Data can have had two possible effects. First, our hypothesis, that it increases information intermediation. However, it can also reduce the number of analysts covering a specific stock since information is more easily retrieved by investors themselves. Our results indicate that this is not the case and investors still seek analysts' advice, since the number of analyst estimates are consistently increasing for all firms.

Group	Estimate	Standard Error	p-value	
All	1.84939	0.8950	0.0388	**
Non-ITFI	1.99969	0.9726	0.0399	**
ITFI	1.52201	1.8965	0.4223	

***: significant on a 1% level / **: significant on a 5% level / *: significant on a 10% level

Table 5. Results of Analysts Counts

6 Conclusion

This study analyzes the effects of a participation of firms in a voluntary SEC program for the reporting through XBRL. In April 2009, the SEC made the program compulsory and the program is being implemented through a staggered introduction over three years. However, it is still unclear what the effects of reporting with XBRL were on financial markets. We derive two hypotheses from existing literature. Previous studies suggest that voluntary disclosure reduces the cost of equity capital and increases information intermediation. In our study, we conclude that voluntary filing has positive effects for participating companies. We find significant results on a medium-term level for the cost of capital using different asset pricing models for the industry groups IT and Financials. This fits in our presumption of stronger motives for specific industry groups to participate in the program, such as consulting expertise. However, we do not find any short-term effects for this group. For the differentiation of first adopter within one industry, we find positive abnormal returns for this group as compared to other adopters, but in the long-term, this effect of being the first in one industry does not reduce the cost of capital as for the other participants. Our results on information intermediation show an increase in analyst coverage after reporting with XBRL through the SEC's voluntary filing program, proxied by I/B/E/S estimates counts.

We contribute to previous literature on the economic success of IT investment with our analysis of the cost of capital of firms as well as the proxy for information intermediation. Additionally, we contribute to existing XBRL literature which does not take a closer look on the economic effects, such as cost of capital and information intermediation, of the early voluntary introduction of XBRL in the US. Our results raise further questions whether voluntary adaption has had other effects than those we analyzed which might justify the decision of early voluntary adoption or whether participation might even have been harmful for participating companies, considering costs involved in an early adoption. Future research might involve more in-depth study of information intermediation and analysis of the effects on the cost of equity capital using implied cost-of-capital models. Further studies can also include an analysis of the mandatory introduction of Interactive Data by the SEC and the differences in the effects of voluntary and mandatory introduction.

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